UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
DENVER, CO 80202-1129
Phone 800-227-8917
http://www.epa.gov/region08

Ref: EPR-SR

AUG 2 8 2012

ACTION MEMORANDUM AMENDMENT

SUBJECT: Action Memorandum Amendment Requesting Approval to Address Libby Amphibole Asbestos Contamination in Rainy Creek Floodplain for Time-Critical Removal Action in Operable Unit 3 of the Libby Asbestos Superfund Site Libby, Lincoln County, Montana.

FROM: James B. Martin
Regional Administrator

THRU: James E. Woolford, Director
Office of Superfund Remediation and Technology Innovation

Lawrence M. Stanton, Director
Office of Emergency Management

TO: Mathy V. Stanislaus, Assistant Administrator
Office of Solid Waste and Emergency Response

Re: Site ID#: BC
Category of Removal: Time Critical, NPL, PRP-Lead Action

I. INTRODUCTION

The purpose of this Action Memorandum Amendment is to request and document approval for increasing the scope of the removal action described in earlier Action Memoranda by adding a time-critical removal action for Rainy Creek within the Libby Asbestos Superfund Site (Site) in Lincoln County, Montana. This Action Memorandum Amendment addresses the removal of Libby amphibole asbestos-containing vermiculite waste in the Rainy Creek floodplain in Operable Unit 3 (OU3).

While considering various alignments for re-routing Rainy Creek as part of a preliminary evaluation of potential site remediation scenarios, Libby amphibole asbestos-containing vermiculite waste was discovered in October 2011 south of and below the "Amphitheater" at OU3. The Amphitheater is a

portion of the Site used for staging soil removed from OU4 (the town of Libby) before it is transported to the top of the former mine for disposal.

The waste is present in an area of approximately five acres below the Amphitheater, north and south of the Rainy Creek channel. The estimated average thickness of the vermiculite waste is about 12 inches based upon information gathered from test pits. A visual estimate of the extent of Libby amphibole asbestos-containing vermiculite waste was made based on color of the material which is easily delineated from native soil by its dark grey to whitish hue, as well as the differences in vegetation density and type growing on the waste material when compared to surrounding soil. Assuming these estimates, the volume of the contaminated vermiculite is about 8,100 cubic yards.

Rainy Creek flows near the vermiculite waste below the Amphitheater, which likely acts as a source of elevated levels of Libby amphibole asbestos that were detected in the surface water in lower Rainy Creek during sampling conducted in 2011. To mitigate the potential for Libby amphibole asbestos in the waste vermiculite to contaminate lower Rainy Creek, the waste material will need to be excavated and transported to the disposal area at the top of the former mine. This is the same area that is used to dispose of Libby amphibole asbestos-contaminated soil removed as part of the remediation of OU4, the town of Libby.

II. SITE CONDITIONS AND BACKGROUND

A. Site Description

Libby OU3, Former Vermiculite Mine

The former Zonolite Mine is a portion of OU3 of the Libby Asbestos Superfund Site. The former mine is approximately 6.5 miles east of Libby, Montana. The disturbed area of the mine property is approximately 1,100 acres. Vermiculite was mined beginning in the early 20th century; from 1963 through 1990, the mine, mills and associated processes were operated by the W.R. Grace Company (Grace). The mine was closed by Grace in 1990 due to a decrease in demand for vermiculite. As part of the Superfund designation of the Libby Asbestos Site, a remedial investigation/feasibility study (RI/FS) was initiated at OU3 in October 2007.

Aside from being the single largest known deposit of vermiculite in the world, the Zonolite deposit is unique in that it contains an assemblage of amphibole asbestos minerals including the form known as Libby amphibole asbestos. In the Zonolite deposit, asbestos was introduced to the vermiculite by hydrothermal waters, millions of years after the emplacement of the vermiculite.

The mined deposit is in the form of a dome, in the center of a roughly circular basin. The rim is from 400 to 900 feet above the top of the mine. The basin is drained by Fleetwood Creek around the north flank of the vermiculite dome and by Carney Creek around the south flank. These creeks are tributaries to Rainy Creek, a much larger stream whose headwaters are at an elevation of 5,500 feet on the slope of Blue Mountain, about five miles north-northwest of the mine. Rainy Creek and Fleetwood Creek flow into the mine tailings impoundment. High water flows during spring snowmelt that cannot be contained

by the impoundment dam flow through a box culvert and a spillway, re-joining the Rainy Creek channel below the dam. Carney Creek joins Rainy Creek downstream of the impoundment. From the area of the mine, Rainy Creek flows southwest about two miles to the Kootenai River, a major tributary to the Columbia River system.

B. Other Actions to Date

The initial Action Memorandum (EPA Region 8, May 23, 2000) and subsequent Amendments (August 2001, May 2002, May 2006, June 2006, September 2008, June 2009, August 2009, and April 2012) provide basic descriptions of the vermiculite mine, vermiculite processing facilities, several contaminated properties, and the conditions found throughout the Libby valley. The September 2008 Amendment describes actions at other creeks within the Libby Site, but does not address Rainy Creek in OU3. In 2011, surface water samples were collected to characterize Libby amphibole asbestos concentrations in the Rainy Creek watershed (SRC & CDM 2011).

C. Current Actions

The responsible parties, W.R. Grace & Co. – Conn and Kootenai Development Company, are performing a remedial investigation (RI) in OU3 pursuant to EPA oversight.

D. State, Local, and Other Authorities' Roles

There are no significant changes in roles from the previous April 2012 Action Memorandum Amendment. The Montana Department of Environmental Quality (MDEQ) has taken the lead role for the investigation and screening of the town of Troy (OU7). The United States Army Corps of Engineers is supporting the EPA in providing contracting and construction oversight for the removal and remedial actions. The Agency for Toxic Substances and Disease Registry (ATSDR), the United States Geological Survey (USGS), and the National Institute for Occupational Safety and Health are active participants in the Libby Action Plan, which is a suite of scientific studies aimed at expanding our knowledge of the toxicity of Libby amphibole asbestos. The USGS also provides EPA with technical assistance regarding the mineralogy, morphology, and measurement of Libby amphibole asbestos. Lincoln County and the City of Libby are active in several local advisory groups and coordinate directly with EPA on many issues regarding the removal actions and remedial investigations. In addition to its lead role for Troy, the MDEQ coordinates with EPA on the implementation of all removal actions and remedial investigations.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

A. Threats to Public Health or Welfare:

Despite considerable progress, conditions at OU3 of the Libby Asbestos Site still present a significant threat to public health. EPA has considered all of the factors described in Section 300.415(b)(2) of the NCP, and has determined the following factors continue to be present at the Libby Asbestos Site, in particular at OU3:

(i) Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants.

A discussion of the type and nature of risks posed throughout the Libby Asbestos Site has been provided in the previous Action Memoranda.

Exposures to Libby amphibole asbestos fibers from the Libby mine site are hazardous to humans as evidenced by the occurrence of asbestos-related disease in area residents and workers. Workers and area residents exposed to elevated levels of asbestos fibers from the Libby mine site have been found to have increased mortality and morbidity from asbestos-related conditions, including asbestosis, pleural fibrosis, lung cancer, and mesothelioma. Asbestos-related lung diseases have also been observed in area residents with no direct occupational exposures, including family members of mine workers, and even in those with no known association with the vermiculite mining or processing activities (Weis, 2001; Miller, 2005; ATSDR, 2002; ATSDR, 2003).

Adverse health effects from exposures to asbestos are not limited to the respiratory system. Oral exposures to asbestos fibers greater than 10 μm in length have resulted in tumor formation in the gastrointestinal tract in rats (EPA, 1985). These data were the basis for the development of EPA's Maximum Contaminant Level (MCL) for asbestos in drinking water of 7 million fibers per liter.

Surface water sampling results of the Rainy Creek watershed show that Libby amphibole asbestos contamination from the former vermiculite mine is reaching Rainy Creek and its tributaries. Results from surface water sampling in the Rainy Creek watershed show that the concentration of asbestos exceeds the applicable MDEQ and EPA water quality benchmarks. As a water quality benchmark, the State of Montana has adopted EPA's MCL for asbestos of 7 million fibers per liter (MDEQ 2010). Thus, due to the presence of Libby amphibole asbestos in Rainy Creek, there is a threat to public health due to the exceedance of the MCL and the degradation of a potential drinking water source.

In addition, Libby amphibole asbestos-containing water from Rainy Creek used for irrigation or associated with flooding events could recontaminate other operable units such as OU2 (the former screening plant) and could affect the protectiveness of the remedy for these OUs. Water containing Libby amphibole asbestos used for irrigation or deposited on land during flooding events will evaporate leaving behind Libby amphibole asbestos fibers that will be available for inhalation exposures and potential respiratory adverse health effects such as asbestosis, pleural fibrosis, lung cancer, and mesothelioma.

(iv) High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate

While covered by vegetation, the waste vermiculite, which contains 3 – 4 % Libby amphibole asbestos, is located in the floodplain of Rainy Creek. The channel of Rainy Creek flows adjacent to the waste vermiculite, which is likely contributing some of the Libby amphibole asbestos that is observed in downstream samples of Rainy Creek water. Libby amphibole asbestos-containing water used for

irrigation or associated with flooding events could recontaminate soils at other operable units such as OU2 (the former screening plant) and could affect the protectiveness of the remedy for these OUs. Water containing Libby amphibole asbestos is used for irrigation or deposited on land during flooding events, which will evaporate leaving behind Libby amphibole asbestos fibers that will be available for inhalation exposures and potential respiratory adverse health effects such as asbestosis, pleural fibrosis, lung cancer, and mesothelioma.

(v) Weather conditions that may cause hazardous substances or pollutants or contaminants to be released

High water or flooding events, such as those associated with spring thaws, can cause Rainy Creek to erode Libby amphibole asbestos-containing surface soil releasing Libby amphibole asbestos into Rainy Creek. Libby amphibole asbestos found in surface water in OU3 can migrate to other water bodies such as the Kootenai River. This migration of Libby amphibole asbestos fibers from OU3 can contaminate not only the Kootenai River (and other water bodies down gradient from the Kootenai), but also impacted land areas surrounding these water bodies via irrigation activities or during flooding events as described above.

B. Threats to the Environment

Work on an ecological risk assessment was initiated in September 2007. Investigations to assess ecological impacts from Libby amphibole asbestos-containing media are currently underway. While currently no response actions are based on ecological impacts at the Site, this may change as data are collected and analyzed.

IV. ENDANGERMENT DETERMINATION

The actual or threatened releases from this Site, if not addressed by continuing to implement the time-critical removal actions set forth in the original Action Memorandum, subsequent Amendments, and this Amendment may present an imminent and substantial endangerment to public health or welfare or the environment. The original Action Memorandum for the Site, dated May 23, 2000 (EPA Region 8, 2000), as well as subsequent Amendments and the administrative record, describe in detail evidence of the toxicity associated with exposure to Libby amphibole asbestos, the large number of human exposure pathways, the significantly elevated disease rate in Libby residents, and the variety of conditions present in and around Libby that could lead to continuing exposures. The rationale for determination of an imminent and substantial endangerment from exposures in Libby is four-fold: 1) amphibole fibers from Libby amphibole asbestos have been demonstrated to cause a variety of lethal and sublethal health effects in exposed members of the Libby community; 2) complete human exposure pathways (by inhalation and ingestion) have been positively identified by personal observation and empirical measurement; 3) Libby amphibole asbestos fibers have been positively identified in multiple media (air, soil, dust, and water); and 4) risk estimation by a variety of qualitative and quantitative techniques indicates unacceptable human exposure. This Action Memorandum Amendment specifically addresses the mitigation of Libby amphibole asbestos contamination into Rainy Creek, a potential drinking water source.

V. EXEMPTION FROM STATUTORY LIMITS

The Libby Action Memorandum dated May 23, 2000, provided the documentation required to meet the NCP Section 300.415(b) criteria for a removal action. The May 2002 Action Memorandum Amendment provided EPA's determination concerning the consistency exemption at CERCLA Section 104(c)(1) [NCP Section 300.415(b)(5)(ii)]. These provisions continue to apply to the Rainy Creek Floodplain removal action. Since this Action Memorandum Amendment is being prepared separately from the other Libby Site Action Memorandum Amendments, it only shows costs for the Rainy Creek Floodplain removal action, not for the rest of the Site.

VI. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Action Description

The Action Memorandum Amendment from May 2002 sets forth the basic scope for the current set of removal actions at the Libby Asbestos Site. The current set of Action Memorandum Amendments, including the 2008 Creeks Action Memorandum Amendment (EPA Region 8, 2008), acknowledges that more portions of the Libby Asbestos Site require cleanup than originally anticipated. This Action Memorandum Amendment addresses the Rainy Creek Floodplain in OU3.

Vermiculite waste containing Libby amphibole asbestos will be removed from the Rainy Creek floodplain. This area is directly south of the Amphitheater and downstream from the confluence of Rainy Creek and Carney Creek. Excavated contaminated vermiculite will be placed in dump trucks and covered during transport to the disposal area. During excavation and loading, the excavator, dump trucks and material to be excavated and removed will be continuously sprayed with water to suppress dust and prevent potential release of Libby amphibole asbestos fibers into the atmosphere. Filled dump trucks will travel about three miles up the main mine haul road and will place the waste material in designated areas or constructed cells, as has been done with waste from OU4. Based on the estimated volume of contaminated materials, more than 900 truckloads will be transported to the top of the former mine. In addition to using the visible contrast between the waste material and the native soil to determine the depth and area of waste removal, confirmation samples will be collected and analyzed.

B. Contribution to remedial performance

The Site was made final on the NPL in October 2002. While cleanup at the Site continues to be conducted using removal authority, the Site was transitioned to the Region 8 Remedial Program after final listing on the NPL. It is expected that the cleanup approaches used during removal actions will be similar to, and consistent with, those used during remedial actions.

C. Description of alternative technologies

The EPA attempts to employ the most appropriate technologies for addressing risks. At this time, there are no other known viable alternative technologies available for addressing asbestos in the environment.

D. EE/CA

No EE/CA is required.

E. Applicable or relevant and appropriate requirements

A list of federal and state ARARs pertinent to this removal is attached (see Appendix A). ARARs to be attained by the action will be finalized in the approved final work plan.

F. Project Schedule

Work on Rainy Creek is expected to begin during the summer of 2012, and is to be completed in the fall of 2012.

G. Estimated Costs

The estimated extramural cost to conduct the Removal Action for the Rainy Creek Floodplain is $155,360.

Labor	$51,730
Equipment	$70,200
Other Field Cost	$12,430
Cost of OU3 Removal	***$134,360***
Third-party quality assurance and oversight	$21,000
TOTAL COST	**$155,360**

This Action Memorandum amendment does not seek any increase in site ceiling. The total estimated cost for removal actions in 2012 and 2013 is $50,000.000.

H. Administrative Record

The administrative record for this Action Memorandum Amendment will be available at the EPA Superfund Records Center, 1595 Wynkoop Street, Denver, CO 80202, (303) 312-6473, within 60 days of the effective date of the Action Memorandum Amendment. A copy of the administrative record will also be available at the EPA Information Center, 108 E. 9th Street, Libby, MT, (406) 293-6194.

VII. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Delayed action will result in the ongoing potential for continued public exposure to high levels of Libby amphibole asbestos. Failure to take action has the potential to increase the risk to public health and continue to burden an already impacted community.

VIII. OUTSTANDING POLICY ISSUES

There are no new policy issues or considerations.

IX. ENFORCEMENT

A confidential enforcement addendum has been prepared.

X. RECOMMENDATION

This decision document represents the selected removal action for the removal of Libby amphibole asbestos sources from the Rainy Creek Floodplain in OU3 of the Libby Asbestos Site in Lincoln County, Montana. The proposed removal action has been developed in accordance with CERCLA as amended and is consistent with the NCP. The decision is based on the Administrative Record for OU3 of the Site. Conditions at the Site continue to meet the NCP [40 CFR § 300.415(b)] criteria for a removal action.

Approve: _____ Date: 8/31/2012
Mathy V. Stanislaus, (In travel)
Assistant Administrator
Office of Solid Waste and Emergency Response

Disapprove: _____ Date: _____
Mathy V. Stanislaus,
Assistant Administrator
Office of Solid Waste and Emergency Response

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ATSDR, 2002. Mortality in Libby, Montana 1979-1998, Libby Asbestos Site, Libby, Lincoln County, Montana, Agency for Toxic Substances and Disease Registry, Atlanta, GA.

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EPA, 1985. Drinking Water Criteria Document for Asbestos, EPA 600/X-84-199-1, Office of Research and Development, Cincinnati, OH.

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MDEQ, 2010. Circular DEQ-7, Montana Numeric Water Quality Standards, August 2010.

Miller, 2005. Amphibole Mineral Fiber Contamination of Various Source Materials in Residential and Commercial Areas of Libby Pose an Imminent and Substantial Endangerment to Public Health. Memorandum from Aubrey Miller, USEPA Regional Medical Officer and Site. Dated 9/29/2005.

SRC & CDM, 2011. Phase IV Sampling and Analysis Plan, Remedial Investigation, Part B: Surface Water Study, Libby Asbestos Site, Operable Unit 3, April 4, 2011.

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